

# THE RAGCHEW

## W 1 M X

M. I. T. RADIO SOCIETY  
TWENTY-SIXTH ANNIVERSARY



### Officers

WILLIAM FINGERLE, JR., President  
ALDEN E. ACKER, Vice-President  
RUSSELL C. COILE, Secretary

### Advisors

Prof. EDWARD L. BOWLES

DR. JOHN L. BARNES

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MAY, 1935



# **DIRECTORY** **M. I. T. RADIO SOCIETY**

| CALL  | NAME                  | HOME                       | TERM RESIDENCE                |
|-------|-----------------------|----------------------------|-------------------------------|
| W1CSG | Acker, Alden E.       | '37 Revere                 | 162 Prospect Ave., Revere     |
| W1FWM | Albiston, Roger C.    | '37 Pawtucket, R. I.       | Dormitory                     |
| W6CLB | Alder, Robert L.      | '38 Fresno, California     | Dormitory                     |
| W1AHX | Austin, John F.       | '38 Cohasset               | CedarLane, Cohasset           |
| W11QL | Bentley, George P.    | G Quincy                   | 20 Exeter St., Wollaston      |
| W1DXT | Bliss, Philip         | '37 Newburyport            | 46 Whittier St., Andover      |
| W1FEA | Brewer, Given A.      | '38 New Bedford            | Dormitory                     |
| W2CTJ | Cohen, Arthur M.      | '36 New Rochelle, N. Y.    | 84 Bay State Rd., Boston      |
| W1ILE | Coile, Russell C.     | '38 Fortress Monroe, Va.   | Dormitory                     |
| W9KGC | Du Bois, Louis F.     | '37 St. Louis, Mo.         | Dormitory                     |
| W1GOW | Eaton, William E.     | '38 Newport, R. I.         | Dormitory                     |
| W8NLM | Evers, James T.       | '35 Wauseon, Ohio          | 532 Beacon St., Boston        |
| W2BPS | Fingerle, William     | '36 Port Chester, N. Y.    | Dormitory                     |
| W3CPO | Gadwa, Truman A.      | G Pendleton, Ore.          | Graduate House                |
| W1CMV | Gardner, Frank S.     | '38 Brookline              | Dormitory                     |
| W3DRV | Glancy, Robert C.     | '37 Upper Darby, Pa.       | Dormitory                     |
| W1OZ  | Golden, Gerald M.     | '35 Boston                 | 43 Nottingham Rd., Brighton   |
| W4EM  | Greene, Francie M.    | G Birmingham, Ala.         | The Graduate House            |
| W3BZO | Harcum, William M.    | '37 Bryn Mawr., Pa.        | 528 Beacon St., Boston        |
| W2ARL | Helwith, Edward E.    | '35 Brooklyn, N. Y.        | Dormitory                     |
| W8HPM | Hull, Lewis W.        | '38 Waverly, Pa.           | Dormitory                     |
| W3CAZ | Jackson, Frank H.     | '38 Drexel Hill, Pa.       | 26 Hancock St., Boston        |
| W1HCR | Jelatis, Demetrius G. | '38 Somerville             | 60 Clarendon Ave., W. Som.    |
| W1GEI | Jenks, Frederic A.    | '38 Boston                 | 40 Hastings St., West Roxbury |
| W1ETE | Jensvold, Gray        | '37 Mystic, Conn.          | 428 Memorial Drive            |
| W8AMZ | Johnson, Henry C.     | '36 Niagara Falls, N. Y.   | 484 Beacon St., Boston        |
| W9JIH | Jordan, Robert Y.     | '37 Chicago, Ill.          | Dormitory                     |
| W2GNE | Kahn, Charles R.      | '37 Woodmere, N. Y.        | 84 Bay State Rd., Boston      |
| W1FLC | Keithley, Joseph F.   | '37 Peoria, Ill.           | 241 Kent St., Brookline       |
| W2GAK | Kodama, Sidney P.     | '38 Shrewsbury, N. J.      | Dormitory                     |
| W5    | Koenig, Palmer E.     | '35 Dallas, Texas          | 50 Massachusetts Ave.         |
| W9PFV | Kornblith, Lester     | '38 Winnetka, Ill.         | 83 Egmont St., Brookline      |
| W1AZQ | Krim, Norman B.       | G Boston                   | 84 Bay State Rd., Boston      |
| W1EMH | Lamb, Fred L.         | '38 Newton                 | 46 Pine Ridge Rd., Waban      |
| W5EK  | Lenoir, Walter F.     | G Houston, Texas           | Graduate House                |
| W1ELX | McAdam, Walter K.     | '36 Sea Cliff, N. Y.       | 255 St. Paul St., Brookline   |
| W1DKC | McKean, Walter A.     | G Newark, N. J.            | Graduate House                |
| W1EIL | McLean, Hames D.      | '37 Framingham             | 88 Lincoln St., Framingham    |
| W9EAY | McMillan, Brockway    | '37 Hinsdale, Ill.         | 397 Com'w'lth Ave., Boston    |
| W2FBH | Maida, Francis X.     | '37 Long Branch, N. J.     | Dormitory                     |
| W2EQC | Minter, Jerry B.      | G Fort Worth, Texas        | 50 Austin St.                 |
| W1IDA | Nelson, Clifford V.   | '38 Malden                 | 31 Laurel St., Malden         |
| W1    | Packard, Lucius E.    | '35 Somerville             | 191 Willow St., Somerville    |
| W9GMH | Peyton, Newton H.     | '38 Duluth, Minn.          | 532 Beacon St., Boston        |
| W4VH  | Phinizy, William H.   | '38 Ventnor, N. J.         | 28 Fenway, Boston             |
| W1EPH | Popkin, Jerome R.     | '38 Brockton               | Dormitory                     |
| W1HPB | Porter, Nathaniel C.  | '37 Trevett, Me.           | 260 Fisher Ave., Brookline    |
| W9CHD | Regnery, Walter       | '37 Hinsdale, Ill.         | 397 Commonwealth Av., Boston  |
| W1ENE | Roehrig, Jonathan     | '38 Newton                 | 32 Fern St., Auburndale       |
| W1IRL | Simpson, John M.      | '37 Muncie, Ind.           | 32 Bay State Rd., Boston      |
| W1ENG | Stearns, Stuart G.    | '38 Newton                 | 340 Wolcott St., Auburndale   |
| W1HHR | Tuttle, David F.      | '37 Rye, N. Y.             | Graduate House                |
| W2HQQ | Viles, James          | '38 Chicago, Ill.          | Dormitory                     |
| W2BGL | Wilsey, Henry R.      | '36 Upper Montclair, N. J. | Dormitory                     |
| W1BXJ | Wintman, Jack A.      | '36 Chelsea                | 104 Cottage St., Chelsea      |
| W9ASD | Wood, Duane O.        | '37 Denver, Colo.          | 8 Dana St.                    |



## 26 YEARS OF PROGRESS



For many years, along with highly successful engineers and scientists, M. I. T. has been turning out an unequaled number of pioneering leaders in the radio profession. There have been but few noteworthy advances in any field of radio research or application for two decades in which an M. I. T. man has not been engaged. The fact that nearly all of these men have been members of the Radio Society during their Institution careers is of particular interest.

Today it is everywhere conceded that the Radio Amateurs of the world have contributed far more to radio advancement than any other agency. The Radio Society of M. I. T. has played a salient role in this connection. In 1909, twenty-six years ago, when the great Marconi was electrifying the world by drawing those first transoceanic signals down from the clouds on a kite wire, the amateur spirit at Technology was aroused, and the M.I.T. Radio Society organized.

As early as 1913, when transmitting tubes had not, as yet, been devised, and the A. R. R. L. was still unborn, the Society constructed a successful transmitter in the Lowell Building. It was one of the first spark transmitters, of the type which made a more reliable audible than high-frequency signal!

During the period of the war, despite the ban on amateur radio communication, the enthusiasm for radio at M. I. T. found expression when the Society turned out en masse to secure commercial licenses. As a result, during 1916, as many as eight men earned commercial licenses, and five men won amateur ratings, while during 1917, there were seven more commercial and twelve amateur operators at M. I. T.

During 1914, Hiram Percy Maxim, the noted inventor and authority on sound, best known for his Maxim machine gun silencer and for many automobile patents, organized the American Radio Relay League. In 1917, the Navy issued an insistent demand for five hundred capable radio operators to train and supervise radio work for the duration of the war. This demand was met by the A. R. R. L. in a manner which heightens our pride in H. P. Maxim as an M. I. T. man; within ten days the Navy had its five hundred operators!

Following the post-war readjustment, amateur radio regained its privileges, and embarked on the course which has contributed much to the development of radio science. One of the first and most effective communication outfits in amateur ranks was Technology's station, W1XM. Its transmitter, a 50 watt tube in a Hartley circuit, was high power for those days. With this transmitter the Radio Society took the first step toward its later fame. During 1922, an international listening contest engaged the attention of all radio enthusiasts. The rain of letters and cards, the reports in radio magazines and innumerable requests for information about the station, verify the Radio Society's records in regard to the success of W1XM in this contest; one of the very first transmitters to put signals across the ocean from an amateur station! Many an amateur would thrill with satisfaction at



the letters contained in the files of the Radio Society, letters from Fred Schnell and K. B. Warner of the A. R. R. L., and from technical magazines of repute, requesting information and advice!

It was during 1922 that a number of now successful men found time from their study hours to operate the Radio Society station for at least ten hours every day, and to work more than 800 stations over a period of four months. One of the more enthusiastic of the men who kept the "watches" was K. V. R. Lansingh, '24, the man who a few years ago originated a most successful radio magazine for the western states, the familiar "R9". Dick Briggs of the 1922 Radio Society is the Mr. Richard Briggs of the research department of the Champion Lamp Company, makers of Sylvania tubes. Perhaps we may be permitted a fraternal pride in Sylvania transmitting tubes which contributed many new developments, including the graphite anode, to radio progress. Professor Stratton, '23, of the Technology Physics department, and James Clapp, '23, of the General Radio Company, also received their injections of radio spirit at the key of W1XM.

1922 and 1923 were eventful years for W1XM. On November 24, 1922, notifications were received from Honolulu stating that the station had been heard there twice by 6ZAC in recent months. On the 23rd and 26th of the same month, the signal was heard by G2KW, who cabled W1XM to arrange for some test schedules. And so it went. When the transatlantic tests, held in the last few months of 1922, were over, W1XM came out with flying colors and a reputation for being one of the American stations most consistently heard in Europe. Not content, however, to rest, reveling in the light of fame, the start of 1923 saw the gang turning its attention to other fields of endeavor. The March 28th issue of The Tech contained an article captioned "Radio Society Beats Marconi" in which was described a truly remarkable feat, that of successfully designing a 13 meter transmitter using one type 204 tube.

During 1933, the Radio Society pioneered again by installing and operating a constant temperature, crystal controlled standard frequency transmitter. Such a service, especially from an amateur station, was of startling originality and value. Many hours spent in calibrating and checking this device resulted in gratifying response from amateurs all over the eastern states, and later transmissions from W1XP at South Dartmouth, operated by the same man, Howard A. Chinn, (now research engineer for C.B.S) have been the standard upon which thousands of amateurs have relied for frequency checks in recent years.

The years since 1923 have shown progress, not the wild dash of the preceding years, but a slower, steadier advancement to the present state. It was during part of this period that the Society was guided by F. S. Dellenbaugh, Jr. who has since maintained contact with it by occasional lectures on power supply and filter design. In 1926 the station call letters were changed to W1XM and the standard frequency transmissions were taken over by W1XP, the Round Hill station. Numerous changes followed: transmitters were built, only to be replaced with better ones as the society kept abreast of technical developments. The list of ex-members grew rapidly, some attaining success and fame in the eyes of their fellow amateurs and engineers. John Dyer, '31, Chief Engineer in charge of communications on the second Byrd Expedition, and Cliff Harvey, '31, of Harvey Radio Laboratories, are among the latest to be included among the chosen few.

Unfortunately, space has permitted none but the "high spots" in the career of the Society to be covered. However, future annual issues of the Ragchew will endeavor to mention names and interesting incidents connected with its history.



## CURRENT ACTIVITIES

The outstanding activity of the Radio Society this year was the co-operation with the M.I.T. Aeronautical Engineering Society in equipping their gliders with two-way radio equipment. During the recent Easter vacation from April 17-21, four members of the Radio Society went out to an airport in Springfield, Mass. with twenty members of the Aeronautical Society who took two gliders. The radio equipment was found very helpful in instructing student pilots who had never flown before, since the instructor on the ground could correct the pilot's mistakes while in the air. Tests were made of two way communication with the glider, with the tow car, and with three radio equipped cars, so that suitable equipment can be designed for use at the national glider meet at Elmira, New York this summer. The Radio Society plans to build and install ultra high frequency equipment, in the A.E.S.'s gliders and also perhaps for the use of their ground crews.

Quite a bit of construction has been done at the Society's "Shack" during the year. Approximately six complete transmitters have been built, most of which have been since torn down, the parts being needed for further experimentation in circuit design. One of the transmitters which remains is a high-frequency phone operating on a frequency of 14,216 kc. It has a power input of about a hundred watts to the modulated amplifier, a 211. The transmitter uses a type 59 tritet oscillator, an 841 frequency doubler, and an 865 screen grid buffer which drives the 211 power amplifier. The modulator consists of a '57 voltage amplifier, a '56 speech amplifier, and a pair of '45's driving the Sylvania graphite anode 210's.

Among the outstanding men in radio who spoke before the Society this year were McMurdo Silver, famous for receiver design and Cliff Harvey, '31, of ultra-high frequency fame.

Although the Radio Society enjoyed quite an active year plans have been made to make the next year an even better one.

## NEXT YEAR'S PLANS

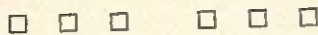
The Executive Committee, composed of William Fingerle, Jr. Alden Acker, Russell C. Coile, Palmer E. Koenig, and Nathaniel Porter, has made extensive plans for next year. An active, well balanced program of experimentation, trips, publications, technical meetings has been decided upon. The Society plans to hold a convention of all college radio clubs in New England early in the fall. It is also investigating the possibilities of being made a student branch of the Institute of Radio Engineers. A technical development program has been designed. An investigation of directive antennae, particularly in regard to ultra-high frequency propagation, is to be undertaken. The Station Committee is working on an improved design of a high frequency phone transmitter which it intends to construct early in the fall. In conjunction with all of the work which the Society has done this year on the ultra-high frequencies, a proposed high power transmitter, to be used possibly for standard frequency work in the 28 mc, and 56 mc bands, is being thought of. The Society is thinking of constructing with the co-operation of the Electrical Engineering department a special rotary directive array to be used with the present 14 mc. phone transmitter.

The Executive Committee is planning to have a series of the best technical meetings possible. Trips to inspect various manufacturing plants and transmit-



ting stations will also be taken. In regard to the Society's "Ragchew" which has now been published for four years, the secretary is planning a slightly different scheme for next year. Instead of being a weekly news-sheet as it was this year, it will appear as a monthly magazine next year. This change will enable the Society to enjoy many other features which were unattainable this year. Several technical articles will be included in each issue and many more members of the Society will have the chance to exercise their journalistic ability.

With over fifty licensed hams in school, active officers, competent advisors, and the co-operation of the Electrical Engineering department, the M.I.T. Radio Society is looking forward to many enjoyable years.



## FACULTY ADVISORS OF THE M. I. T. RADIO SOCIETY

The M. I. T. Radio Society is very fortunate in having two splendid advisors, Professor Edward L. Bowles and Doctor John L. Barnes. Through their helpful co-operation and advice, the Society has had many successful years. The Radio Society wishes to acknowledge in these pages their help, and to express our sincere appreciation for it.

Professor Bowles is a recognized authority on electrical communication. He is the author of the section in the Standard Handbook for Electrical Engineers on Electron Tubes and Wave Filters, and is the co-author of the section on "Electric and Magnetic Circuits, and Radio and Carrier Communication." He has studied intensively in the field of the historical background of radio communication, and has done a great deal of work in patent litigation.

Professor Bowles received his B. S. from Washington University in St. Louis in 1920. After some graduate study at M.I.T. he received his Masters degree in 1922. He became an instructor in Electrical Engineering, and is now Associate Professor of Electrical Communication, in charge of the Communication Division at M.I.T. and Director of the Round Hill Research division.

Professor Bowles is a member of the Institute of Radio Engineers, American Institute of Electrical Engineers, Physical Society, Optical Society, the American Association for the Advancement of Science, and Sigma Xi. He is also on the Radio Advisory Committee of the Department of Commerce, the Committees on Education, Engineering, and Communications of the A.I.E.E., and chairman of papers committee, local section of the I.R.E.

Doctor John L. Barnes is indeed a creditable example of M.I.T. alumni. A graduate of the Bell System option of course VI-A, he was a member of the honors group. He received his S.B. in 1928 and his S.M. in 1929. He then went to Princeton where he studied higher mathematics and received an A.M. degree in 1930 and a Ph.D. in Mathematics in 1934. He was an assistant instructor and research assistant instructor of Electrical Engineering in 1933-34. In September, 1934, he came back to M.I.T. as an instructor in Electrical Engineering. He has published several articles in the Journal of Mathematics and Physics.



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ON YOUR

26th Anniversary



The

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